# Thistle Alpha Platform Topsides Decommissioning Programme





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Prepared by:	S. Axon	S. Axon	14 Sept 2021	
Reviewed by:	C. Wheaton	C. Wheaton 14 Sept 202		
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# TABLE OF TERMS AND ABBREVIATIONS

ABBREVIATION	EXPLANATION
~	Approximate
<	Less than
>	More than
1568 (Figure 1.5.2)	DANICE
1737 (Figure 1.5.2)	CANTAT-3
CANTAT-3	The fibre-optic submarine telecommunications cable system CANTAT-3 became ready for service around November 1994. The system has a length of 2,500km and is owned and/or operated by Faroese Telecom. CANTAT-3 has landing points in Denmark, Germany, Faeroe Islands, and Iceland.
COS	Crude Oil Storage Tanks
DANICE	The DANICE submarine communications cable system transits 2,250km of the North Atlantic Ocean and the North Sea to connect Landeyjarsandur, Iceland and Blaabjerg, Denmark. The cable went into operation in November 2009. The owner of the cable is Farice ehf, a Faroese telecommunications provider.
DP	Dynamic Positioning
EI.	Elevation (relative to LAT)
EnQuest	EnQuest Heather Limited
FPU	Floating Production Unit
GMG	Global Marine Group
in	inch
IPR	Interim Pipeline Regime
km	Kilometre
L	Length
LAT	Lowest Astronomical Tide
m	Metre(s)
m <sup>2</sup>	Square Metre(s)
m <sup>3</sup>	Cubic Metre(s)
MAT, SAT	Master Application Template, Supplementary Application Template
MBES	Multi-Beam Echo Sounder (which is a sonar-based seabed imaging system)
N,S,E,W	North, South, East, West
n/a	Not Applicable
NDR	National Data Repository
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Ireland Fish Producers Organisation
NLGP	Northern Leg Gas Pipeline
NORM	Naturally Occurring Radioactive Material
OGA	The Oil and Gas Authority
OPEP	Oil Pollution Emergency Plan
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo Paris Convention
PL	Pipeline Identification numbers (UK)
SALM	Single Anchor Leg Mooring
SFF	Scottish Fishermen's Federation
SLV	Shear Leg Vessel
SSCV	Semi-Submersible Crane Vessel
SSIV	Subsea Isolation Valve
Те	Tonne
Thistle	Thistle Alpha
UK	United Kingdom
UKCS	United Kingdom Continental Shelf
W	Width
WGS84	World Geodetic System 1984
WONS	Well Operations Notification(s)



# 1. EXECUTIVE SUMMARY

## 1.1 Decommissioning Programme

This document concerns the Thistle Alpha topsides Decommissioning Programme.

Although removal of the Thistle Alpha topsides is being treated in this document as a standalone project, EnQuest will continue to explore cost saving synergies with other projects.

**Installations:** In accordance with the Petroleum Act 1998, EnQuest Heather Limited (as operator of the Thistle field), and on behalf of the Section 29 notice holders (Table 1.3.3), is applying to the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) to obtain approval for decommissioning the Thistle topsides as detailed in Section 2 of this document. Partner Letters of Support will be provided directly to OPRED.

The Decommissioning Programme is submitted in compliance with national and international regulations and OPRED guidance notes. The schedule outlined in this document is for a four-year period to remove the topsides completely and return it to shore for recycling, and disposal due to begin in 2024.

The remaining jacket and pipeline infrastructure covered by notices under Section 29 of the Petroleum Act 1998 will be subject to Decommissioning Programme, Environmental Appraisal and Comparative Assessment submissions later. Removal of the topsides will not preclude available decommissioning options for the Thistle Alpha jacket.

## 1.2 Introduction

The Thistle field was discovered in 1972 in the fourth UK acreage licensing round in block 211/18 and 211/19 (licenses P236 and P475). The field is produced over the Thistle Alpha platform (here after referred to as the Thistle A platform), a fixed installation providing manned production, drilling, and utilities facilities. The Thistle A installation is situated in block 211/18a of the United Kingdom Continental Shelf and operated by EnQuest Heather Limited. The Thistle field is located ~201km North-East of Shetland, in a water depth of ~162m.

The Thistle jacket was installed in 1976 with the topsides' modules being installed in the following year; Oil production commenced in February 1978.

Decommissioning of the jacket and the pipelines (PL13, PL74, PL75, PL2578, PL2579, PL2852, PLU2853, PL4555, and PL4556) associated with Thistle will be discussed in separate Decommissioning Programmes, and so for brevity shall not be discussed further. As the risers and umbilicals are fixed to the jacket, these will remain in place for decommissioning at a later stage, however sections that interface between the jacket and topsides will be cleaned and removed to facilitate topsides removal.

The Thistle platform is also host to the Northern Leg Gas Pipeline PL166 spur that was used to import gas to Thistle, and the control umbilical for the Subsea Isolation Valve (SSIV). While the NLGP trunkline itself remains operational these pipelines are no longer used. Proposals for decommissioning the PL166 spur and the umbilical will be agreed separately with NLGP owners and OPRED. Meantime however, the owners of the PL166 spur and the SSIV control umbilical will be kept informed of developments and will confirm directly to OPRED acceptance of proposals to disconnect the riser and umbilical.

The COS tanks were attached to the lower section of the two main legs and were initially used as buoyancy to aid installation of the Thistle jacket. Subsequently they were used for storing the produced crude oil after the export route via the Single Anchor Leg Mooring (SALM) buoy-offloading system was made redundant. The platform no longer produces, but when Thistle exported oil via the 8in oil pipeline PL4555, the COS tanks were no longer required and were removed in April 2020 and were placed inside the Thistle 500m safety zone where they are subject to ongoing monitoring. They will be removed to shore as part of the wider Thistle decommissioning scope.

The Cessation of Production justification for Thistle was accepted by the Oil and Gas Authority on 14 September 2020. The Decommissioning Programme explains the principles of the removal activities and includes an assessment of the key environmental impacts and mitigations (Section 4.1).

Thistle A Topsides Decommissioning Programme



# 1.3 Thistle – overview

## 1.3.1 Installations

Table 1.3.1: Installations being decommissioned							
Field(s):	Field(s): Thistle		Production Typ	е	Oil		
Water Depth (m)	~162m		UKCS Block		211/18a		
Sub-Surface Installations							
Number			Туре		Weight		
1		-	Topsides 19,156Te		19,156Te		
Drill Cuttings piles <sup>1</sup>		Distance to med	an Distance from nearest coastline				
25,456m <sup>3</sup>		~11km		201km NE of Shetland			

#### 1.3.2 Drill cuttings

Table 1.3.2: Drill Cutting(s) pile information <sup>2</sup>				
Location of Pile Centre         Seabed Area (m <sup>2</sup> )         Estimated Volume of drill Cuttings (m <sup>3</sup> )				
n/a	n/a	n/a		

#### 1.3.3 Section 29 holders

Table 1.3.3: Installation Section 29 notice holder details					
Section 29 Notice Holder Registration Number Equity Interest (%) <sup>3</sup>					
EnQuest Heather Limited	02748866	-			
Britoil Limited	SC077750	81.72%			
Chrysaor Production (U.K.) Limited	00524868	18.28%			
EnQuest Thistle Limited	04487223	-			

<sup>&</sup>lt;sup>1</sup> Volume of cuttings pile is indicative only and is subject to further survey in 2021;

<sup>&</sup>lt;sup>2</sup> The drill cuttings pile is not being addressed as part of this Decommissioning Programme.

<sup>&</sup>lt;sup>3</sup> The Thistle Field is beneficially owned 1% Britoil and 99% by EnQuest. However, the decommissioning liability is shared with the previous Thistle Field owners, Britoil (81.71875%) and Chrysaor Production (U.K.) Limited (18.28125%).

Table 1.3.4: NLGP pipeline and SSIV control umbilical 29 notice holder details					
Sec	Registration Number	Equity Interest (%) <sup>4</sup>			
	BP Exploration Operating Company Limited	00305943	-		
Magnus Field Group	EnQuest Heather Limited	02748866	36.000%		
	EnQuest NNS Limited	10573715	-		
Murahisan Field Crown	CNR International (U.K.) Limited	00813187	14.004%		
Murchison Field Group	Wintershall DEA Norge AS	985 224 323	3.996%		
	EnQuest Heather Limited	02748866	-		
Thistle Group	Britoil Limited	SC077750	4.903125%		
	Chrysaor Production (U.K.) Limited	00524868	1.096875%		
UK Statfjord Field Group	02855151	40.00%			
NOTE					

1. Ownership of the NLGP pipeline terminates at the bottom of the Thistle owned NLGP riser;

2. Details of the Section 29 Holders for the Control umbilical for the SSIV are included for information only. Letters of support will not be required, but the NLGP owners will be asked to confirm to OPRED separately the proposals for decommissioning that the NLGP spur pipeline PL166 and control umbilical for the SSIV and to confirm that they are no longer required.

# 1.4 Summary of proposed decommissioning programme

Table 1.4.1: Summary of decommissioning progr	amme	
Proposed Decommissioning Solution	Reason for Selection	
1. Topsides		
Complete removal and recycling. The topsides will be recovered to shore and recycled. Cleaned equipment refurbished for re-use where possible. Equipment which cannot be re-used will be recycled or other disposal routes as appropriate.	Meets regulatory requirement and maximises opportunity for re use or recycling or materials.	
Any permit applications required for work associated with removal of the		
topsides will be submitted to the regulator as required.		
2. Wells		
All wells will be decommissioned to comply with HSE "Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996" and in accordance with the latest version of the Oil & Gas UK Well Decommissioning Guidelines. The wells will be decommissioned using the platform-based facilities possibly supplemented by temporary equipment.	Meets the OGA and HSE regulatory requirements.	
A Master Application Template (MAT) and the supporting Subsidiary Application Template (SAT) will be submitted in support of works carried out. An application to decommission the wells will be made via the online Well Operations Notification System (WONS) on the OGA Energy Portal. The decommissioning is scheduled to commence in Q2 2021.		
3. Interdependencies		
An assessment of alternative uses has been made for the Thistle platform and considered economically viable. Due to timescales of decommissioning, separative will be submitted for both the Thistle jacket and the pipeline infrastructure. The	d there were no options that were ate decommissioning programmes drill cuttings will be considered at	

No third-party infrastructure will be disturbed as a result of the decommissioning proposals.

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this time.

<sup>&</sup>lt;sup>4</sup> Ownership of the NLGP is the same, but the decommissioning liability is shared slightly differently. It is the decommissioning liability interests that are quoted here.

# 1.4.1 Thistle A platform photographs



Figure 1.4.1: Thistle A platform view on South Face<sup>5</sup>



Figure 1.4.2: Thistle A platform view on East Face



<sup>&</sup>lt;sup>5</sup> North, South, East, West are quoted relative to platform North rather than Grid North.



Figure 1.4.3: Thistle A platform view on north face



Figure 1.4.4: Thistle A platform view on north & west faces





# 1.5 Field locations including field layout and adjacent facilities

Figure 1.5.1: Field locations in UKCS





Figure 1.5.2: Thistle adjacent facilities<sup>67</sup>

 <sup>&</sup>lt;sup>6</sup> The Northern Producer FPSO was decommissioned April 2021, although the pipeline infrastructure inside the former 500m safety zone meantime remains *in situ*. The Murchison installation and pipelines have been decommissioned.
 <sup>7</sup> For description of telecommunication cables 1568 and 1737 please refer Table of Terms and Abbreviations.





Figure 1.5.3: Thistle 500m zone





Figure 1.5.4: Thistle COS tanks inside 500m zone



Table 1.5.1: Adjacent facilities						
Owner	Name	Туре	Distance/ Direction	Information	Status	
CNR International (UK) Limited & Wintershall Norsk AS	Murchison	Installation	~9.5km NE of Thistle A	Decommissioning Programme approved August 2014. Footings of jacket remain	Decommissioned	
MCX Dunlin (UK) Limited	Dunlin A	Installation	~9.7km S of Thistle A	Originally connected to Thistle via PL13, now bypassed. Decommissioning Programme currently under consideration	Non-operational	
TAQA Europa B.V.	Eider A	Installation	~22.5km W of Thistle A		Operational	
EnQuest Heather Limited	Thistle	SALM Base	~2.4km NE of Thistle A	Gravity base foundation	Non-operational	
EnQuest Heather Limited	Northern Producer	FPU	~15.1km NNW of Thistle A	Tied back to Commingling Wye via PL2578	Decommissioned April 2021; associated infrastructure meantime remains <i>in situ</i> <sup>1</sup>	
EnQuest Heather Limited	Magnus	Installation	~32.2km NNW of Thistle A	Connected to Commingling Wye via PL4556	Operational	
EnQuest Heather Limited, Britoil Limited, Chrysaor Production (U.K.) Limited	PL13	Pipeline	16in Oil Pipeline ~12.7km long	Thistle A Platform to Dunlin A Platform. Pipe spool removed at Dunlin A	Out of use	
EnQuest Heather Limited, Britoil Limited, Chrysaor Production (U.K.) Limited	PL74	Pipeline	16in Oil Pipeline ~2.4km long	Thistle A Platform to SALM Base	Pipeline currently in IPR. Disused since 1983	
EnQuest Heather Limited, Britoil Limited, Chrysaor Production (U.K.) Limited	PL75	Pipeline	16in Water Ballast Pipeline ~2.4km long	Thistle A Platform to SALM Base	Pipeline currently in IPR. Disused since 1983	
EnQuest Heather Limited	PL2579	Pipeline	3in Gas Import (Fuel Gas) Pipeline ~15.7km long	Thistle A Platform to Northern Producer	Out of use	
Fairfield Betula Limited, MCX Dunlin (UK) Limited	PL2852	Pipeline	4in Gas Import Pipeline ~10.3km long	Thistle A Platform to Dunlin A Platform	Out of use	
EnQuest Heather	PL4555	Pipeline	8in Oil Pipeline	Thistle 'A' Platform to	Operational	

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Table 1.5.1: Adjacent facilities					
Owner	Name	Туре	Distance/ Direction	Information	Status
Limited, Britoil Limited	(Includes section of pipeline previously numbered PL2578)		~10.6km long	Commingling Wye Structure	
Impacts of decommissioning proposals					
There are no direct impacts on adjacent facilities from the decommissioning works associated with removal of the Thistle topsides.					
NOTE:					

1. Refer Decommissioning Programmes for "Northern Producer FPF and Don SW and West Don riser disconnection" and "Conrie, Don South-West, West Don and Ythan". These are available here: <u>https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines</u>.

# 1.6 Industrial implications

The Thistle topsides Decommissioning Programme will be managed by EnQuest to ensure safe, efficient, and legally compliant delivery of the various elements of the decommissioning scope. The intention is to make efficient use of the supply chain to generate value through the application of knowledge, innovation, and technology, explore collaboration opportunities and to employ best practice in the management of the supply chain to deliver a cost effective and reliable service. Where appropriate existing framework agreements may be used for decommissioning activities.



# 2. DESCRIPTION OF ITEMS TO BE DECOMMISSIONED

Table 2.1.1: Thistle topsides information					
Namo	Eacility Type	e Location <sup>8</sup>		Part of Installation	
Name	Facility Type			Weight (Te)	No of modules
		WGS84 Decimal	61.363036°N 1.579761°E		
Thistle Alpha	Topsides	WGS84 Decimal Minute	61°21.7821"N 1°34.78567"E	19,156Te	34

## 2.1 Part of Thistle installation: Topsides

# 2.2 Wells

Table 2.2.1: Well information (Deveron)				
Well ID	Slot Number	Designation	Status	Category of Well <sup>9</sup>
211/18-A51	3	Side-tracked to A58	Decommissioned, AB1	
211/18-A58	3	Oil production	Shut in	PL 4-3-3
211/18-A44	7	Side-tracked to A63	Decommissioned, AB1	
211/18-A63	7	Oil production	Shut in	PL 4-4-3
211/18-A48	23	Side-tracked to A48Z	Decommissioned, AB1	
211/18-A48Z	23	Oil production	Decommissioned, AB3	PL 0-0-4
NOTE				

1. The Deveron owners are the same as the Thistle owners;

2. For details of well categorisation see the latest version of the Oil & Gas UK Guidelines for the Decommissioning of Wells.

Table 2.2.2: Well information (	(Thistle)
---------------------------------	-----------

Well ID	Slot Number	Designation	Status	Category of Well <sup>9</sup>
211/18-A25	1	Side-tracked to A25Z	Decommissioned, AB1	
211/18-A25Z	1	Oil production	Plugged	PL 4-4-3
211/18-A10	2	Side-tracked to A55	Decommissioned, AB1	
211/18-A55	2	Oil production	Shut in	PL 5-3-3
211/18-A17	6	Water injector	Decommissioned, AB1	PL 0-4-3
211/18-A21	10	Oil production	Plugged	PL 3-3-3
211/18-A41	11	Oil production	Decommissioned, AB2	PL 0-0-4
211/18-A43	12	Oil production	Shut in	PL 1-3-4
211/18-A37	13	Side-tracked to A56	Decommissioned, AB1	
211/18-A56	13	Oil production	Shut in	PL 4-3-3
211/18-A49	14	Oil production	Plugged	PL 4-4-4
211/18-A36	15	Oil production	Decommissioned, AB1	PL 0-3-3
211/18-A29	16	Side-tracked to A29Z	Decommissioned, AB1	
211/18-A29Z	16	Oil production	Decommissioned, AB1	PL 0-4-3
211/18-A27	17	Oil production	Shut in	PL 1-3-3
211/18-A33	18	Water injector	Plugged	PL 4-4-4

<sup>&</sup>lt;sup>8</sup> There is a slight discrepancy between data contained on the OGA NDR database and the Thistle A Safety Case. The figures here are taken from the Thistle A Safety Case.

<sup>&</sup>lt;sup>9</sup> The category of well is subject to change as detailed engineering progresses.

Table 2.2.2: Well information (Thistle)				
Well ID	Slot Number	Designation	Status	Category of Well <sup>9</sup>
211/18-A19	19	Water injector	Decommissioned, AB1	PL 0-3-4
211/18-A23	20	Water injector	Decommissioned, AB1	PL 0-4-4
211/18-A32	21	Oil production	Decommissioned, AB3	PL 0-0-4
211/18-A13	22	Water injector	Decommissioned, AB3	PL 0-0-4
211/18-A15	24	Water injector	Decommissioned, AB3	PL 0-0-4
211/18-A5	25	Oil production	Decommissioned, AB3	PL 0-0-4
211/18-A16	26	Water injector	Shut in	PL 1-4-4
211/18-A1	27	Oil production	Decommissioned, AB1	PL 0-4-3
211/18-A3	28	Oil production	Decommissioned, AB3	PL 0-0-4
211/18-A11	29	Oil production	Decommissioned, AB1	PL 0-4-4
211/18-A7	30	Oil production	Decommissioned, AB1	PL 0-4-4
211/18-A2	31	Oil production	Plugged	PL 5-2-4
211/18-A4	32	Oil production	Decommissioned, AB1	PL 0-2-4
211/18-A6	33	Water injector	Plugged	PL 5-2-4
211/18-A31	34	Oil production	Plugged	Refer A61
211/18-A61	34	Oil production	Shut in	PL 5-3-3
211/18-A8	35	Oil production	Decommissioned, AB1	PL 0-3-3
211/18-A14A	36	Side-tracked to A25Z	Decommissioned, AB1	
211/18-A14Z	36	Water injector	Shut in	PL 1-4-4
211/18-A9	37	Oil production	Decommissioned, AB2	PL 0-0-4
211/18-A28	38	Water injector	Decommissioned, AB1	PL 0-4-4
211/18-A12	39	Water injector	Decommissioned AB2	PL 0-0-4
211/18-A30	40	Side-tracked to A307	Decommissioned AB1	
211/18-A307	40	Side-tracked to A50	Decommissioned AB1	
211/18-A50	40	Side-tracked to A64	Decommissioned AB1	
211/18-A64	40	Oil production	Shut in	PI 1-4-4
211/18-A20	41	Oil production	Decommissioned AB1	PL 0-3-4
211/18-A40	42	Water injector	Decommissioned AB1	PL 0-3-4
211/18-A34	43	Oil production	Plugged	PL 4-3-3
211/18-A35	44	Side-tracked to A35Z	Decommissioned AB1	12100
211/18-A357	44	Oil production	Decommissioned AB2	PL 0-0-3
211/18-A46	45	Side-tracked to A59	Decommissioned AB1	. 2000
211/18-A59	45	Oil production	Shut in	PI 4-3-3
211/18-A38	46	Water injector	Decommissioned AB1	PL 0-4-3
211/18-A47	47	Oil production	Decommissioned, AB1	PL 0-2-4
211/18-A39	48	Oil production	Decommissioned, AB1	PL 0-3-3
211/18-A42	49	Oil production	Decommissioned, AB3	PL 0-0-0
211/18-A26	51	Oil production	Decommissioned, AB1	PL 0-4-3
211/18-A45	52	Side-tracked to A45Z	Decommissioned, AB1	
211/18-A45Z	52	Oil production	Shut in	PL 3-4-3
211/18-A24	53	Side-tracked to A54	Decommissioned, AB1	
211/18-A54	53	Side-tracked to A62	Decommissioned, AB1	
211/18-A62	53	Oil production	Shut in	PL 1-3-3
211/18-A18	55	Side-tracked to A60	Decommissioned AB1	
211/18-A60	55	Oil production	Shut in	PL 1-3-3
211/18-A52	58	Side-tracked to A57	Decommissioned, AB1	
211/18-A57	58	Oil production	Shut in	PL 1-3-3
211/18-A22	59	Water injector	Shut in	PL 1-4-3
211/18-A53	60	Water injector	Shut in	PL 1-4-3
NOTE				· <del>-</del> · · ·

1. For details of well categorisation see the latest version of the Oil & Gas UK Guidelines for the Decommissioning of Wells.



Table 2.2.3: Well information (exploration wells)				
Well ID	Slot Number	Designation	Status	Category of Well <sup>10</sup>
211/18-1	n/a	Exploration well	Decommissioned, AB3	SS 0-0-0
211/18-2	n/a	Exploration well	Decommissioned, AB2	SS 0-0-1
211/18-3	n/a	Exploration well	Decommissioned, AB3	SS 0-0-0
211/18-4A	n/a	Exploration well	Decommissioned, AB3	SS 0-0-0
211/18-6	n/a	Exploration well	Decommissioned, AB3	SS 0-0-0
211/18-8	n/a	Exploration well	Decommissioned, AB3	SS 0-0-0
NOTE				

1. For details of well categorisation see the latest version of the Oil & Gas UK Guidelines for the Decommissioning of Wells.

# 2.3 Inventory estimates



Figure 2.3.1: Pie-chart of estimated inventories for Thistle topsides



<sup>&</sup>lt;sup>10</sup> The category of well is subject to change as detailed engineering progresses.

# 3. REMOVAL AND DISPOSAL METHODS

## 3.1 Use of waste framework directive

Waste will be dealt with in accordance with the Waste Framework Directive. The reuse of an installation or pipelines (or parts thereof) is first in the order of preferred decommissioning options. However, given the age of the installations and infrastructure it is unlikely that reuse opportunities will be realised. Waste generated during decommissioning will be segregated by type and periodically transported to shore in an auditable manner through licensed waste contractors. Steel and other recyclable metal are estimated to account for the greatest proportion of the materials inventory.

# 3.2 Topsides' decommissioning

#### 3.2.1 Topsides' description

The Thistle jacket was installed in 1976, and the topsides was installed in Spring 1977. The topsides consists of 34 modules. Several of these modules have been modified to incorporate cantilevered sub-modules (designated for example as Module 11A).

The platform has three main decks. The floors of the lower modules (M1 to M12) form the production deck at El. +24.7m. Within M1 to M12 there is also a mezzanine deck at El. +29.6m.

The exposed roofs of the lower modules form the drilling deck at El. +33.9m. The roofs of the lower modules also support Modules 13, 15, 16, 21 to 31 and 33. The roofs of the modules supported off the drilling deck form the upper deck at El. +39.8m.



Figure 3.2.1: Topsides layout exploded view



	Table 3.2.1: Module key
Module ID	Description
M1	EMERGENCY GENERATOR ANND AIR COMPRESSOR/EMERGENCY COMPRESSOR
M2	POWER GENERATOR (A & B TURBINE)
M2A	TURBINE AIR INLETS AND FLARE DRUMS; UNDERDECK NLGP IMPORT PIPEWORK
M3	WATER INJECTION PACKAGE
МЗА	CHEMICAL INJECTION PACKAGE AND GLC COOLING WATER PACKAGE
M4	SAND FILTERS AND OIL METERING (BRENT SYSTEM)
M5	GAS COMPRESSION AND FUEL GAS SYSTEM (DECOMMISSIONED)
M5A	DEHYRATION AND SPIKING PUMPS; UNDERDECK NGLP HEATERS AND IMPORT METERING
M6	PRODUCED WATER TREATMENT
M7	OIL AND GAS SEPARATION METERING (SALM)
M8 & M9	OIL AND GAS SEPARATION
M10	CENTRAL WELLHEAD AREA, PIGGING AND SPLIT-PHASE SAMPLER, EMERGENCY SHUTDOWN VALVE MASTER PNEUMATIC PANEL
M10B	DON RISER BALCONY
M11	NORTH WELLEAD AREA AND NGLP EXPORT METERING
M11A	GAS COMPRESSION
M12	SOUTH WELLHEAD AREA AND CHEMICAL INJECTION PACKAGE
M12A	DEAERATOR TOWERS AND PUMPS
M13	TRANSFORMERS, SWITCHGEAR ROOM; ROOF – AIR RECEIVERS, TURBINES EXHAUST AND SILENCER
M14	CONTROL ROOM AIR CONDITIONING
M15	WAREHOUSE, WORKSHOP, CONTROL ROOM
M16	VENTILATION ROOM AND UTILITIES ROOM
M17	OFFICE ANNEXE
M18	LIVING ACCOMMODATION
M18A	ACCOMMODATION ANNEXE
M18B	ACCOMMODATION ANNEXE
M19	FLARE TOWER, 'D' TURBINE AND FUEL PACKAGES
M19A	TURBINE LOCAL EQUIPMENT ROOM
M20	HELIDECK
M21	POWER GENERATION, (C TURBINE); ROOF – TURBINE ANCILLIARIES AND EXHAUST
M22	ENGINE PACKAGE
M23	CRUDE OIL SHIPPING PUMPS
M23A/B/C	ELECTRICAL SUMBERSIBLE PUMP MODULES
M24	ENGINE PACKAGE
M25	BULK STORAGE
M26	CEMENT UNIT
M27	MUD TANKS
M28 & M29	MUD PUMPS AND MUD LABS
M30	MUD TANKS
M31	CEMENT UNIT
M33	DRILLING RIG 112
1-8	STAIR TOWERS





Figure 3.2.3: Modules on drilling deck level





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**Preparation and cleaning:** The methods that will be used to vent and purge the topsides equipment and pipework prior to removal to shore are summarised in Table 3.2.2.

	Table 3.2.2: Cleaning	g of Thistle topsides for removal
Waste type	Composition of waste	Disposal route
Hydrocarbons	Process fluids	Will be flushed, Nitrogen purged vented and made liquid free and will be done under applicable MAT and SAT permits.
Production and drilling chemicals	Proprietary preparations and bulk chemicals	Equipment will be drained, flushed, and cleaned and either be discharged overboard under permit or transported to shore for appropriate reuse, recycling, or disposal.
Produced solids	Sand, NORM	Any pipeline debris captured in filter packages, will be returned onshore for disposal. Any solids remaining in vessels will be removed and disposed of during the dismantlement of the topsides onshore. Produced solids may be processed offshore prior to removal of topsides, or process onshore.
Diesel	Bunkered diesel fuel	Bunkered diesel will be drained and returned onshore for re- use or disposal. While the topsides remains in place any diesel in jacket leg G9 (Figure 3.2.5) will be drained and returned to shore for re-use or disposal. The diesel tank will also be cleaned should it be safe to do so. The methods to be used will be agreed beforehand with the EMT Environmental Inspectorate.
Lubricating oils	Lubricants for equipment e.g. gearboxes, pumps, pedestal crane compressor skid	Lubricating oils will be drained and returned onshore for re- use or disposal.



<sup>&</sup>lt;sup>11</sup> Pedestal cranes and drilling derrick shown for quick reference.



# Figure 3.2.5: Diesel tank in leg G9

Table 3.2.3: Thistle topsides removal method		
1) Single Lift Vesse	I ☑; 2) Semi-Submersible Crane Vessel ☑; 3) Hybrid ☑; 4) Piece small ☑; 5) Other □	
Method	Description	
Single lift removal by SLV	Removal of topsides as complete unit by a single lift vessel and transported to an onshore decommissioning facility to be broken up for reuse, recycling, or disposal	
Modular removal by SSCV	Removal of the topsides modules and supporting structures by semi-submersible crane vessel. The resulting material would then be taken to an onshore decommissioning facility to be broken up for reuse, recycling, or disposal	
Piece small	Breaking up the topsides offshore using manual labour or mechanical excavators fitted with hydraulic shears etc. Materials would be transported to shore by ship or barge and sorted at an onshore decommissioning facility.	
Other - Hybrid	Hybrid options of piece small and SSCV cut and lift may be feasible and would likely depend on the type of crane vessel being used.	
Proposed removal method and disposal route	Removal of topsides followed by recovery to shore for reuse, recycling, and final disposal to landfill as appropriate. A final decision on the decommissioning method will be made following a feed study and commercial tendering process.	

# 3.3 Well decommissioning

#### Table 3.3.1: Well decommissioning

The Thistle fields hosts several wells as listed in Table 2.2.1 and Table 2.2.2. All wells will be decommissioned in accordance with latest version of the Oil & Gas UK Well Decommissioning Guidelines. A Master Application Template (MAT) and the supporting Subsidiary Application Template (SAT) will be submitted in support of works carried out. An application to decommission the wells will be made via the online Well Operations Notification System (WONS) on the OGA Energy Portal. Well decommissioning will be scheduled in accordance with the outline schedule presented in 6.3.



# 3.4 Waste Streams

	Table 3.4.1: Waste stream management methods
Waste stream	Removal and disposal method
Bulk liquids	Bulk and residual hydrocarbons will be removed from topsides, although small quantities of residues may remain. Any closed systems will be identified and managed before the topsides is removed. Further cleaning and decontamination will take place onshore prior to re-use or recycling.
NORM	Based on production records to date, NORM can be expected. As a precaution, tests for NORM will be undertaken offshore and any NORM encountered will be dealt with and disposed of in accordance with guidelines and company policies and any permit requirements.
Asbestos	Given the age of the facility it is likely that there will be asbestos. Any such material found will be dealt with and disposed of in accordance with guidelines and company policies.
Original paint coating	The presence of lead-based paints will be identified as these may give off toxic fumes or dust if flame-cutting, grinding or blasting is used so appropriate safety measures will be taken. Painted items will be disposed of with consideration given to any toxic components.
Other hazardous wastes	Discharge of cleaning chemicals offshore will be managed under appropriate permits. Other hazardous wastes will be recovered to shore and disposed of according to guidelines, company policies and permit requirements.
Onshore dismantling sites	Appropriate licensed sites will be selected. Dismantling site must demonstrate proven disposal track record and waste stream management throughout the deconstruction process and demonstrate their ability to deliver re-use and recycling options. If a non-UK yard is selected, appropriate Trans-frontier Shipment of Waste licences will be used.

Table 3.4.2: Inventory disposition												
Inventory	Total inventory (Te)	Planned tonnage to shore (Te)	Planned left <i>in situ</i> (Te)									
Thistle Topsides	19,156	19,156	0									

Table 3.4.3: Re-use, recycle & disposal aspirations for recovered material											
Inventory	Re-use	Recycle	Disposal (e.g. Landfill)								
Thistle topsides	<5%	>95%	<5%								

All recovered material will be transported onshore for re-use, recycling, or disposal. Should synthetic materials be encountered the aspiration is that they would be incinerated, with the resultant heat being used for energy. It is not possible to predict the market for reusable materials with any confidence so the figures in Table 3.4.3 are aspirational. Given the age of the facility it is unlikely that much of the equipment recovered to shore would be suitable for reuse.



# 4. ENVIRONMENTAL APPRAISAL

## 4.1 Impact management

There will be planned environmental impacts and potentially unplanned events that could arise from decommissioning the Thistle topsides. Long-term environmental impacts from the decommissioning operations are expected to be low. Incremental cumulative impacts and trans-boundary effects associated with the planned decommissioning operations are also expected to be low.

The environmental impacts will be addressed in the EIA for the associated Marine Licences.

	Table 4.1.1: Environmental impact management												
Activity	Main Impacts	Management											
Topsides' removal	<ul> <li>Decommissioning of the topsides will require cutting of the structure above sea level and lifting activities using large lift vessels that are potentially anchored. The principal impacts will include:</li> <li>physical presence of vessels and equipment;</li> <li>energy use and</li> </ul>	The impacts associated with the topsides decommissioning operations are expected to be short-term, localised and of low significance provided the proposed mitigation measures are in place. Activities will be planned to be executed as efficiently as possible, minimising cutting to reduce potential noise impacts. The contractors' capability, processes and procedures will be subject to audit and evaluation as part of the selection process. Vessels will be audited as part of selection and premobilisation and marine assurance standards will be adhered to.											
	<ul> <li>atmospheric emissions;</li> <li>underwater noise from vessels;</li> </ul>	Cleaning and flushing of the topsides in preparation for removal will remove hydrocarbons as far as possible to reduce the risk of releases to sea.											
	<ul> <li>noise from cutting operations;</li> <li>discharges to the marine</li> </ul>	Vessels will be managed to minimise durations and on-board operational practices will address fuel efficiency, noise management, and minimise waste.											
	<ul> <li>environment from vessels and residues from topsides;</li> <li>disturbance of the seabed from anchors;</li> <li>generation of waste materials.</li> <li>Risks of additional impact will</li> </ul>	DP vessels will be used in preference over vessels with anchors, however in the event these vessels are required, anchoring procedures will be developed, and these will take account of the possible presence of the COS tanks that are currently within the Thistle 500m zone. Risk assessments will be undertaken for the work at key stages throughout planning and execution.											
	<ul> <li>include:</li> <li>disturbance to the seabed from potential dropped</li> </ul>	As part of the OPEP, specialist oil spill management and response services will be in place, to minimise impacts from potential releases to the marine environment.											
	<ul> <li>objects;</li> <li>accidental releases of hydrocarbons to the marine environment;</li> <li>disruption to fishing or shipping during vessel</li> </ul>	The waste hierarchy will be followed and only if other options are not possible will waste material be sent to landfill. EnQuest will monitor the performance of the contractors throughout operational activities. EnQuest will comply with EU and UK waste legislation and the requirements of duty of care.											
	transits.	The assessment of potential cumulative impacts concludes that these are not anticipated to be significant.											
Topsides' removal	Disturbance or destruction of seabird nests.	In recent years, there has been an increase in the number of seabirds using offshore installations for nesting. Opportunistic species such as kittiwake and herring gull are using artificial nest locations and successfully rearing chicks. In some instances, colonies of several hundred birds have established and return each year. Although for most offshore platforms, the number of breeding birds remains very low. All nesting birds and nesting activities are protected from damage by conservation legislation. Under the Offshore Marine											



	Table 4.1.1: Env	vironmental impact management
Activity	Main Impacts	Management
		17), it is an offence to:
		<ul> <li>take, damage, or destroy the nest of any wild bird while that nest is in use or being built, or,</li> <li>take or destroy an egg of any wild bird.</li> <li>This legislation is relevant to installations more than 12 nautical miles from the coast, applies to all species of bird and applies irrespective of the number of nests found. i.e. there is no deminimus.</li> <li>EnQuest will take proactive steps with respect to wild birds and a bird management plan will be prepared for this, taking account of any anecdotal evidence and survey requirements. The preferred practice is to avoid disturbance by undertaking works outside of the breeding season. However, this is not always practicable. Where practicable, birds will be deterred from settling on the platform using a range of non-lethal deterrents. Should these measures not prove successful, EnQuest will engage with OPRED to agree any further licensing requirements as appropriate. This process will form part of</li> </ul>
		future licensing applications for subsequent offshore



# 5. INTERESTED PARTY CONSULTATIONS

# 5.1 Consultations summary

Table 5.1.1: Summary of stakeholder comments												
Who	Comment	Response										
INFORMAL CONSULT	TATIONS											
NFFO												
NIFPO												
SFF												
CONSULTATIONS												
Who	Comment	Response										
GMG												
NFFO												
NIFPO												
SFF												
Public												



# 6. PROGRAMME MANAGEMENT

## 6.1 **Project management and verification**

An EnQuest project management team will manage the operations of competent contractors selected for all decommissioning activities. The team will ensure the decommissioning is executed safely, in accordance with legislation and EnQuest Health and Safety principles. If required, changes to the Decommissioning Programme will be discussed with OPRED with any necessary approvals sought.

#### 6.2 Post-decommissioning debris clearance and verification

This Decommissioning Programme covers Topsides' removal. Post-decommissioning debris surveys and seabed verification will be described in the subsequent Thistle jacket and pipeline infrastructure Decommissioning Programmes.

## 6.3 Schedule

A proposed schedule is provided in Figure 6.3.1. The activities are subject to the acceptance of the Decommissioning Programme presented in this document and any unavoidable constraints (e.g. vessel availability) that may be encountered while executing the decommissioning activities. Therefore, activity schedule windows have been included to account for this uncertainty.

The commencement of offshore decommissioning activities will depend on commercial agreements and commitments.



Thistle - Activity/Milestone		2021			2022			2023		2024				2025			2026			2027			2028			2029			2030			
		Q2 (	23 Q	<b>4 Q</b> 1	I Q2	Q3 (	Q4 (	<b>ລ</b> 1 ເ	Q2 Q3	3 Q4	Q1	Q2 (	Q3 Q	4 Q	1 Q2	Q3 Q	24 Q	1 Q	2 Q	3 Q4	Q1 (	2 Q3	3 Q4	Q1 (	Q2 (	Q3 Q4	Q1	Q2 Q	3 Q4	Q1	Q2 (	Q3 Q4
Detailed engineering & proj. management																																
Well decommissioning																																
Pipeline flushing																																
Thistle Topsides Removal																																
Onshore disposal																																
Post-decommissioning surveys <sup>1</sup> & close out report <sup>2</sup>																																

#### Notes / Key

Earliest potential activity

Activity window to allow commercial flexibility associated with well decommissioning and decommissioning activities;

Post decommissioning surveys to follow completion of decommissioning activities;
 Close out report within 1 year of completion of offshore activities.

Figure 6.3.1: Gantt-chart of project plan

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# 6.4 Costs

Decommissioning costs will be provided separately to OPRED and OGA.

# 6.5 Close out

After the topsides have been removed, OPRED will be notified and a decommissioning Close Out report will be submitted following the completion of the offshore scope, earliest Q4 2026.

# 6.6 Post-decommissioning monitoring and evaluation

Following removal of the Thistle topsides there may be a period of time before the jacket is removed. During this time, the jacket top will remain above sea level. Throughout this phase of decommissioning the existing 500m zone will remain in place and the Thistle Consent to Locate will be revised to reflect the change to the installation. In addition, appropriate navigational aids will be fitted, and the jacket logged in FishSAFE.

Upon completion of the topsides removal activities the jacket will remain where it is until it is decommissioned. During this period, the jacket integrity will continue to be monitored as per the Company jacket inspection & monitoring strategy. It will be furnished with a temporary Aid to Navigation. The system will be developed in consultation with the Northern Lighthouse Board.

EnQuest will develop maintenance and monitoring procedures that will include remote monitoring, periodic maintenance, and testing in compliance with the Thistle Consent to Locate. The design, manufacture, installation, and maintenance of the navigational aids will be assured via an independent verification scheme and will be further defined in the Safety Case.

Residual liability for the jacket will remain with the Section 29 holders identified in section 0. Unless agreed otherwise in advance with OPRED, EnQuest will remain the focal point for such matters, such as any change in ownership, for example.

Once the wider Thistle Area has been decommissioned the requirement for legacy and liability management will be described in more detail in the final close out report.



# APPENDIX A THISTLE BASELINE ENVIRONMENT

# Appendix A.1 Summary of characteristics & sensitivities

## Table A.1.1: Summary of environmental characteristics and sensitivities

**Physical Environment: Thistle Alpha** is in Block 211/18 and 211/19 of the NNS in water depth of approximately 162m. Mean residual currents in the area are 0.26m/s and are generally from the west. Prevailing winds are from the south or south-west.

**Seabed Sediments and Contamination:** Sediments in the NNS are predominantly sand and within the Thistle area are classified as sand, slightly gravelly sand and gravelly sand. Multi-Beam Echo Sounder identifies a drill cuttings pile below the platform, and historical records of Oil Based Mud discharge will likely result in elevated levels of hydrocarbon contamination in the vicinity of the platform.

**Fish:** The Thistle field lies within the International Council for the Exploration of the Sea (ICES) Rectangle 51F1. Thistle is known to have spawning grounds in the area for Cod (Jan-April), Haddock (Feb-May), Norway Pout (Jan-Mar), Saithe (Jan-Apr) and Whiting (Feb-June). The area is used as nursery grounds for Blue Whiting, Haddock, European Hake, Herring, Ling, Mackerel, Norway Pout, Spurdog and Whiting.

**Benthic Communities:** Surveys in 2007 and 2018 identified a generally diverse homogenous faunal community associated with sandy sediments. Visible fauna observed included annelida, arthopoda, decapoda, bryozoa, cnidaria and echinoidea typical of the area. It is expected that elevated levels of hydrocarbons close to the platform will lead to modified communities of hydrocarbon tolerant species. There was no evidence from seabed imagery of any protected habitats or species.

**Plankton:** The phytoplankton community is dominated by the dinoflagellate genus Ceratium (*C. fusus, C. furca, C. lineatum*), along with the diatoms, *Thalassiosira spp.* and *Chaetoceros spp.* The zooplankton community comprises *C. helgolandicus* and *C. finmarchicus* as well as *Paracalanus spp., Pseudocalanus spp., Acartia spp., Temora spp.* and *Oithona spp.* Larger zooplankton species such as euphausiids and decapod larvae are also important in the area.

**Seabirds:** The following species have been recorded in the wider area: Northern fulmar, Northern gannet, Great skua, Black-legged kittiwake, Arctic skua, Razorbill, European storm petrel, Great black-backed gull, Lesser black-backed gull, Herring gull, Common guillemot, Glaucous gull, Little auk, and Atlantic puffin. These seabirds are present for most of the year except October with overall numbers greatest in August and September. As is typical for the North Sea breeding occurs between April and September. Seabird sensitivity in the Thistle area is low for most of the year except for winter months (Nov-Jan) where it is classed as 'high'. The Thistle field is located ~201km North-East of Shetland and is remote for sensitive seabird breeding areas on the coast.

**Marine Mammals:** Harbour porpoise have been sighted in moderate densities in July and low densities in May and August, whilst both killer whales and minke whales have been sighted in moderate densities in July. Atlantic white-sided dolphin, Risso's dolphin and long-finned pilot whale may be considered occasional visitors.

**Conservation Designations:** There are no designated conservation sites close to Thistle, with the nearest being the Pobie Bank Reef Sites of Community Importance (103km south-west), the North-East Faroe-Shetland Channel Nature Conservation Marine Protected Area (97km north-west).

**Commercial Fisheries:** The project area lies within ICES rectangle 51F1. Commercial fishing activity within this area is medium to high in comparison with other areas. Landings are a combination of demersal, pelagic and shellfish species representing 0.19% of total UK fishing value in 2018.

**Shipping:** Shipping density within the area is low, with any traffic associated with oil and gas developments or cargo vessels.

**Other Offshore Industries:** Thistle is in the northern North Sea oil and gas development area with several fields nearby (Figure 1.5.2).

**Other Users of the Sea:** The closest submarine telecommunication cable is the CANTAT-3 telecommunications cable owned by Faroese Telecom within 1km to the south-west of Thistle. There are no Ministry of Defence exercise areas or danger areas nearby that might be used for military training. There is only one wreck located within Block 211/18.



# APPENDIX B CONSULTEE CORRESPONDENCE

Appendix B.1 Public Notices (HOLD)

Appendix B.2 Correspondence with Statutory Consultees (HOLD)

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